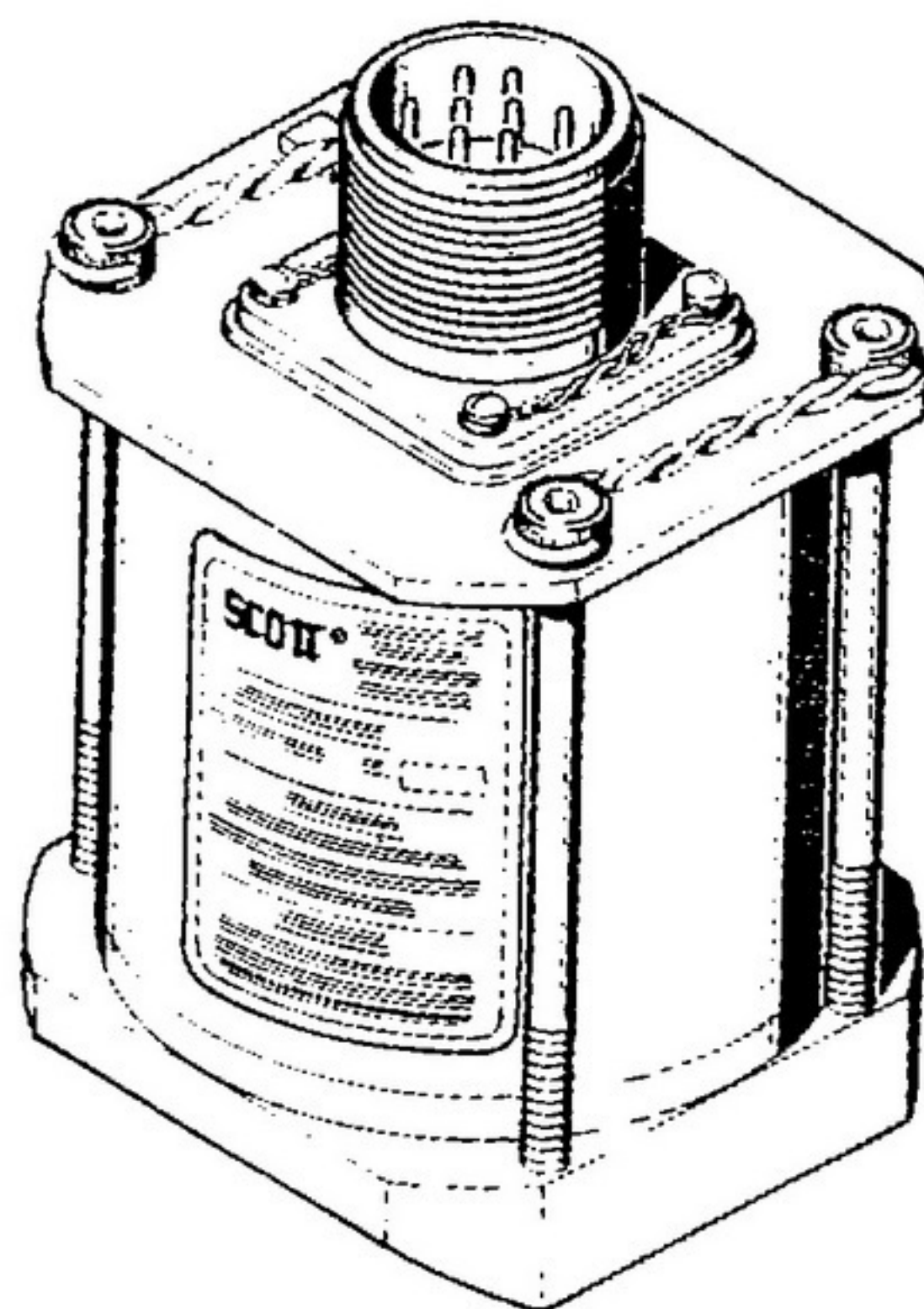


SCOTT®

AIRSPEED SWITCH

MODEL NUMBER

PDC1-1B-161



COMPONENT MAINTENANCE MANUAL

34-14-03

T-1

15 JUL 1985



COMPONENT MAINTENANCE MANUAL
PDC1-1B-161

LIST OF EFFECTIVE PAGES

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COMPONENT MAINTENANCE MANUAL
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INTRODUCTION

This publication contains shop maintenance instructions for Airspeed Switch, Part No. PDC1-1B-161 manufactured by Scott, 123 E. Montecito Ave., Sierra Madre, CA 91024.

The instructions in this manual provide the information necessary to perform maintenance functions ranging from simple checks and replacement.

The manual is divided into separate sections as follows:

- | | |
|----------------------------|----------------------|
| 1. Title Page | 4. Table of Contents |
| 2. Record of Revisions | 5. Introduction |
| 3. List of Effective Pages | 6. Procedures |

Refer to the Table of Contents for page location of applicable procedure sections.

All weights and measurements in the manual are in English units, unless otherwise stated.

The manual will be revised as necessary to reflect current information.

Verification:

Test and Troubleshooting Verified by simulation 16 June 1985

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INTRO-1
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I. DESCRIPTION AND OPERATION

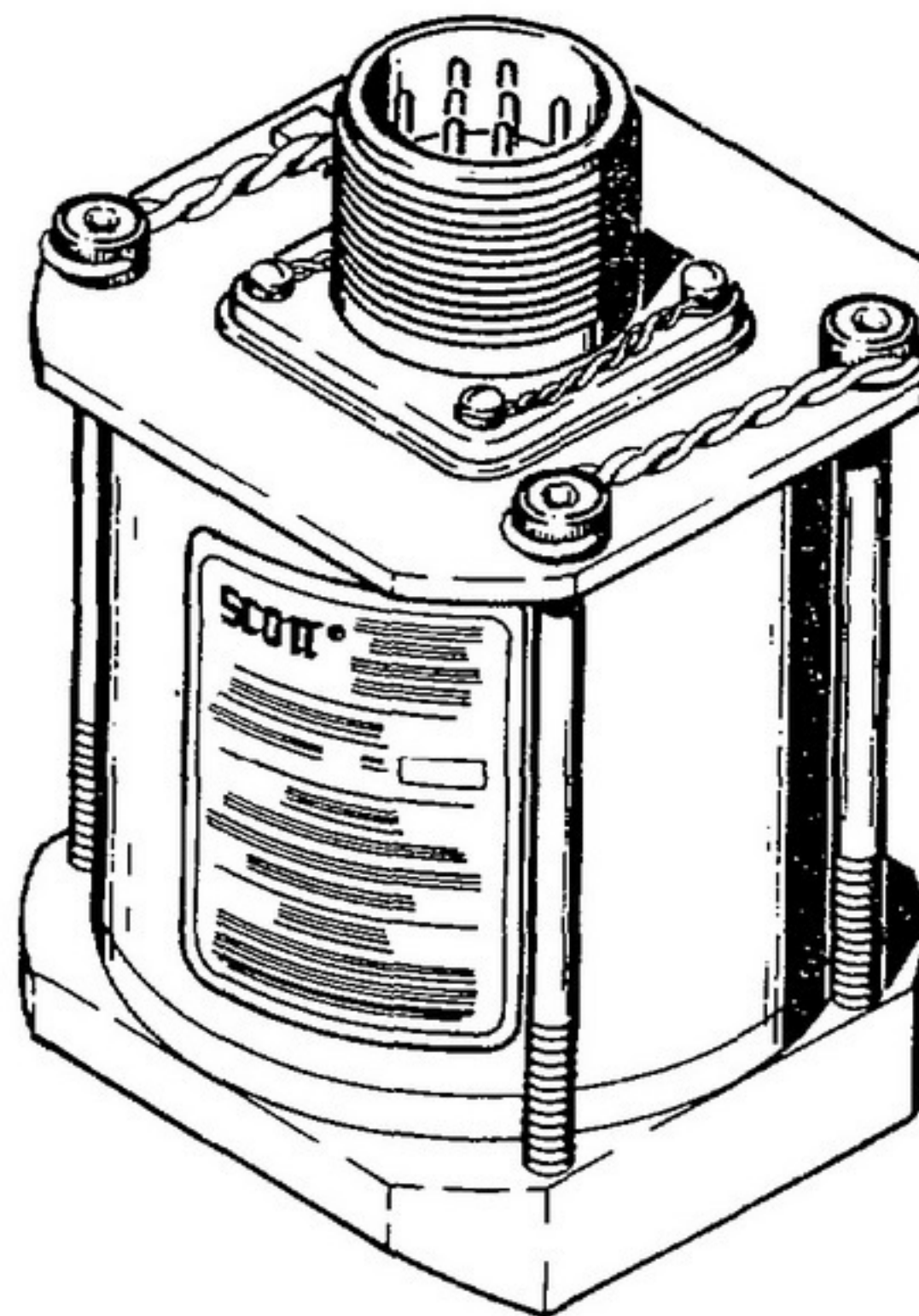
A. Description (see Figure 1)

- (1) The airspeed switch is a pressure-actuated electrical switch.
- (2) The pitot and static ports, actuating mechanism, switch, electrical wiring, and receptacle are assembled into a single compact unit.
- (3) Identification of the pitot and static ports is metal stamped or engraved on the base plate.

B. Operation (see Figure 2)

- (1) The aneroid capsule within the switch senses the pressure differential across the pitot/static system of the aircraft. When this differential increases to a pre-determined value, the electrical contacts break one circuit and make a second circuit.
- (2) As the pressure differential decreases due to diminishing airspeed, the switch contacts reset to the original position. Operation of the airspeed switch is entirely automatic.

C. Leading particulars for the airspeed switch are contained in Table I.



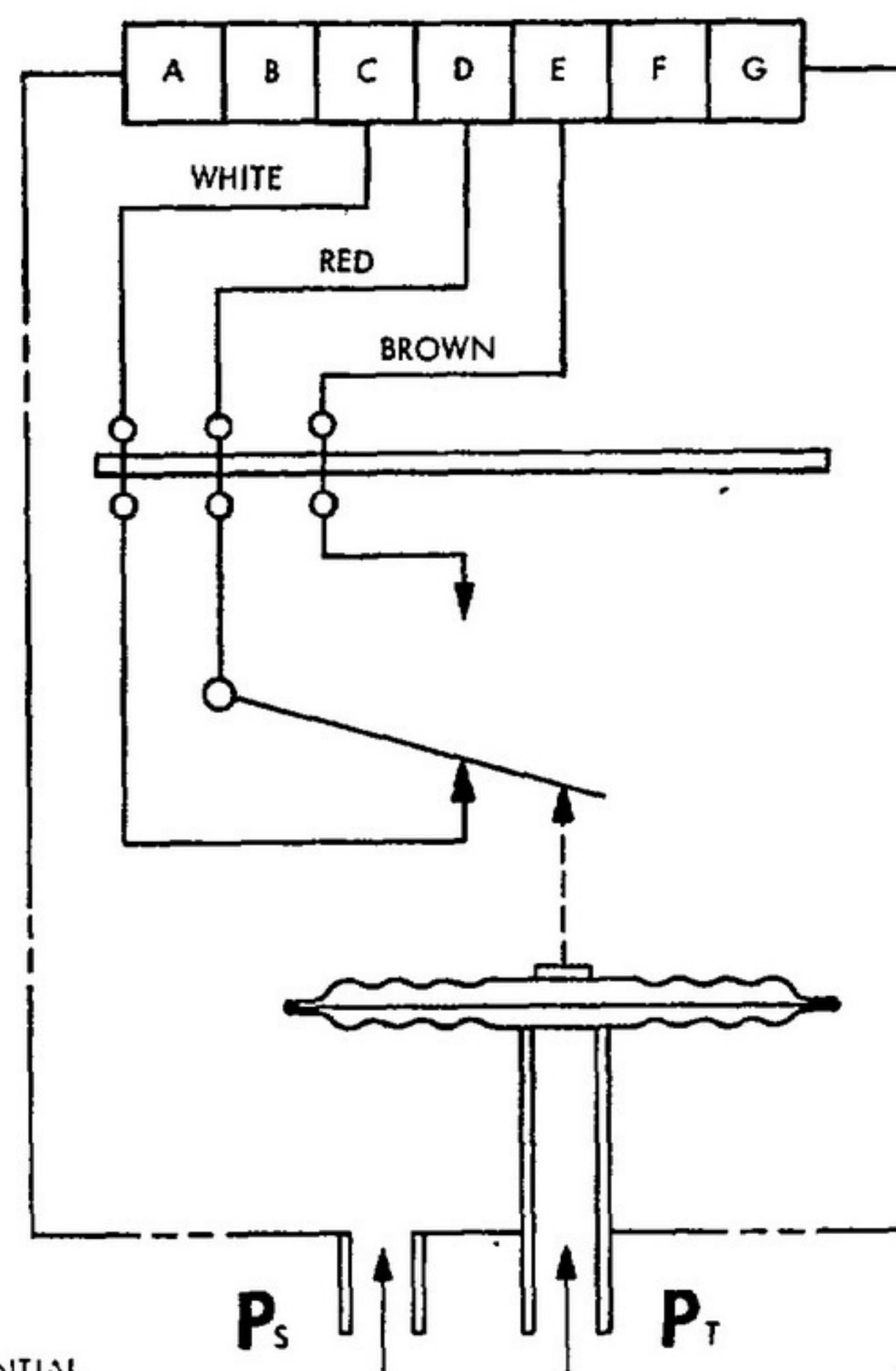
AW2835A-2-1A

Airspeed Switch
Figure 1

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NOTE:
UNIT SHOWN AT ZERO PRESSURE DIFFERENTIAL

AW 2835A-3-1A

Electrical Schematic
Figure 2

Leading Particulars
Table I

ITEM	CHARACTERISTIC
Overall Dimensions:	
Height (without connectors)	3.28 inches
Width or Depth	2.5 inches
Weight (maximum)	1.1 pounds
Operating Temperature Range:	0 to 50°C
Safe Temperature Range:	-40 to +70°C
Altitude Range:	-1,000 to 50,000 feet
Current Rating at 18.0 to 29.5 VDC:	5.0 amperes
Electrical Connector:	MS3102E16SIP or equivalent
Pressure Connectors:	
Pitot Port	Global Type 40006-1A44
Static Port	Global type 40006-1B45

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Leading Particulars (Cont)
Table I

ITEM	CHARACTERISTIC		
Functional Parameters:	ACTUATE, KNOTS (Upon increasing air speed) Before 160	RESET, KNOTS (Upon decreasing air speed) Before 150	DIFFERENTIAL 6 Min.

2. TESTING AND TROUBLESHOOTING

A. Functional Test

- (1) Connect equipment as listed in Table 2 and as shown in Figure 3.
- (2) Determine proper speed and speed differential for unit being tested, using Table I. Find, referring to Table 3, the pitot pressures which correspond to the required actuating speed and reset speed.
- (3) Apply gradually increasing pressure to Pt port, leaving Ps port open to ambient pressure and verify that the normally open circuit closes and normally closed circuit opens at a pressure which is in accordance with the required actuating speed.
- (4) Gradually decrease pressure and verify that the normally open circuit opens and the normally closed circuit closes at a pressure which is in accordance with the required reset speed.
- (5) Using Table 3, determine the speeds which correspond to the observed actuating and reset pressures. The difference between these speeds should be in accordance with the required differential.
- (6) Repeat steps (3) through (5) four times.

B. Leakage Test

- (1) Connect the airspeed switch to the test setup shown in Figure 4 and listed in Table 2.

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Test Equipment
Table 2

IDENTIFICATION	SOURCE
Water Manometer 50-inch Column	Coml available
Continuity Checking Device	Coml available
Mercury Manometer 50-inch Column	Coml available

- (2) Slowly decrease the pressure to approximately 15.00 inches of mercury absolute.
- (3) Close off and record the exact reading of the column of mercury (15.00 inches).
- (4) Maintain these conditions for a period of 3 minutes minimum.
- (5) Record the exact reading of the column of mercury.
- (6) The difference between the reading recorded in step (3) and step (5) is the leakage rate and must not exceed 0.05 inch of Hg per minute.

NOTE: Total system volume for this test shall be 1 cubic inch minimum and shall not exceed 100 cubic inches.

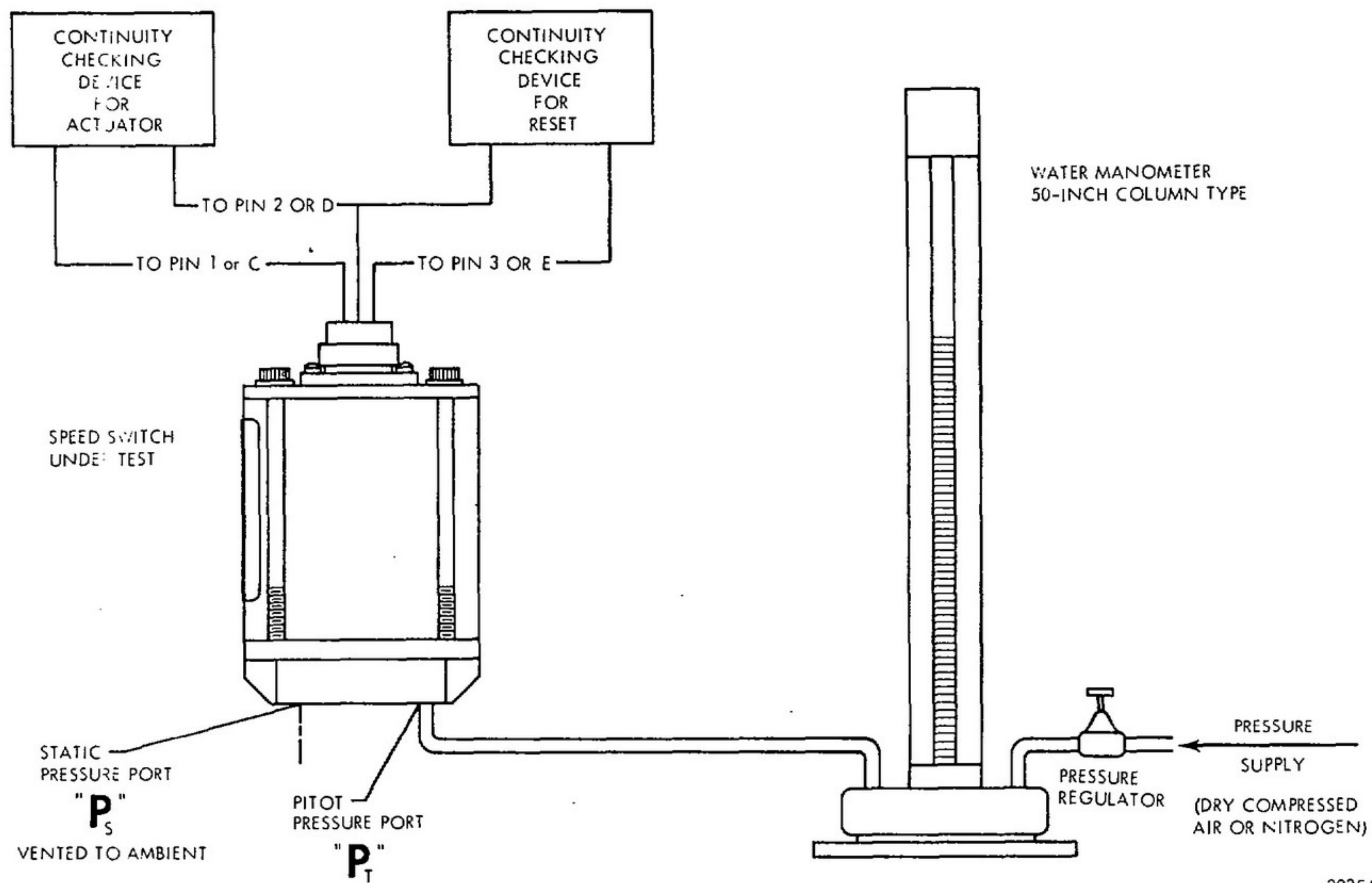
C. Calibration Adjustment

- (1) Remove adjustment access plug (Figure 5).
- (2) Use hex key to adjust capsule (Figure 5) until, with adjustment access plug reinstalled, the test requirements of paragraph 2-A are obtained.
- (3) Lock wire and glyptal adjustment access plug.

D. Troubleshooting

- (1) Troubles that may occur and their probable causes and remedies (corrective actions) are listed in Table 4.

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Actuation and Reset Test Setup
Figure 3

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Calibrated Air Speed (Knots) vs Pitot Pressure (In/Hg)
Table 3

SPEED, KNOTS	PRESSURE, IN/HG	SPEED, KNOTS	PRESSURE, IN/HG	SPEED, KNOTS	PRESSURE, IN/HG
155	1.16592	190	1.76400	225	2.49426
156	1.18122	191	1.78300	226	2.51712
157	1.19662	192	1.80211	227	2.54010
158	1.21214	193	1.82133	228	2.56319
159	1.22775	194	1.84066	229	2.58640
160	1.24347	195	1.86010	230	2.60972
161	1.25929	196	1.87964	231	2.63315
162	1.27522	197	1.89929	232	2.65669
163	1.29125	198	1.91906	233	2.68035
164	1.30738	199	1.93893	234	2.70413
165	1.32362	200	1.95891	235	2.72801
166	1.33997	201	1.97900	236	2.75202
167	1.35642	202	1.99919	237	2.77613
168	1.37297	203	2.01950	238	2.80037
169	1.38963	204	2.03992	239	2.82471
170	1.40640	205	2.06045	240	2.84917
171	1.42327	206	2.08109	241	2.87375
172	1.44025	207	2.10183	242	2.89844
173	1.45733	208	2.12269	243	2.92325
174	1.47451	209	2.14366	244	2.94818
175	1.49181	210	2.16474	245	2.97322
176	1.50921	211	2.18592	246	2.99837
177	1.52671	212	2.20722	247	3.02364
178	1.54432	213	2.22863	248	3.04903
179	1.56204	214	2.25016	249	3.07454
180	1.57987	215	2.27179	250	3.10016
181	1.59780	216	2.29353	251	3.12590
182	1.61584	217	2.31539	252	3.15175
183	1.63398	218	2.33735	253	3.17773
184	1.65223	219	2.35943	254	3.20382
185	1.67059	220	2.38162	255	3.23003
186	1.68906	221	2.40393	256	3.25635
187	1.70763	222	2.42634	257	3.28280
188	1.72631	223	2.44887	258	3.30936
189	1.74510	224	2.47151	259	3.33604

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Calibrated Air Speed (Knots) vs Pitot Pressure (In/Hg) (Cont)
Table 3

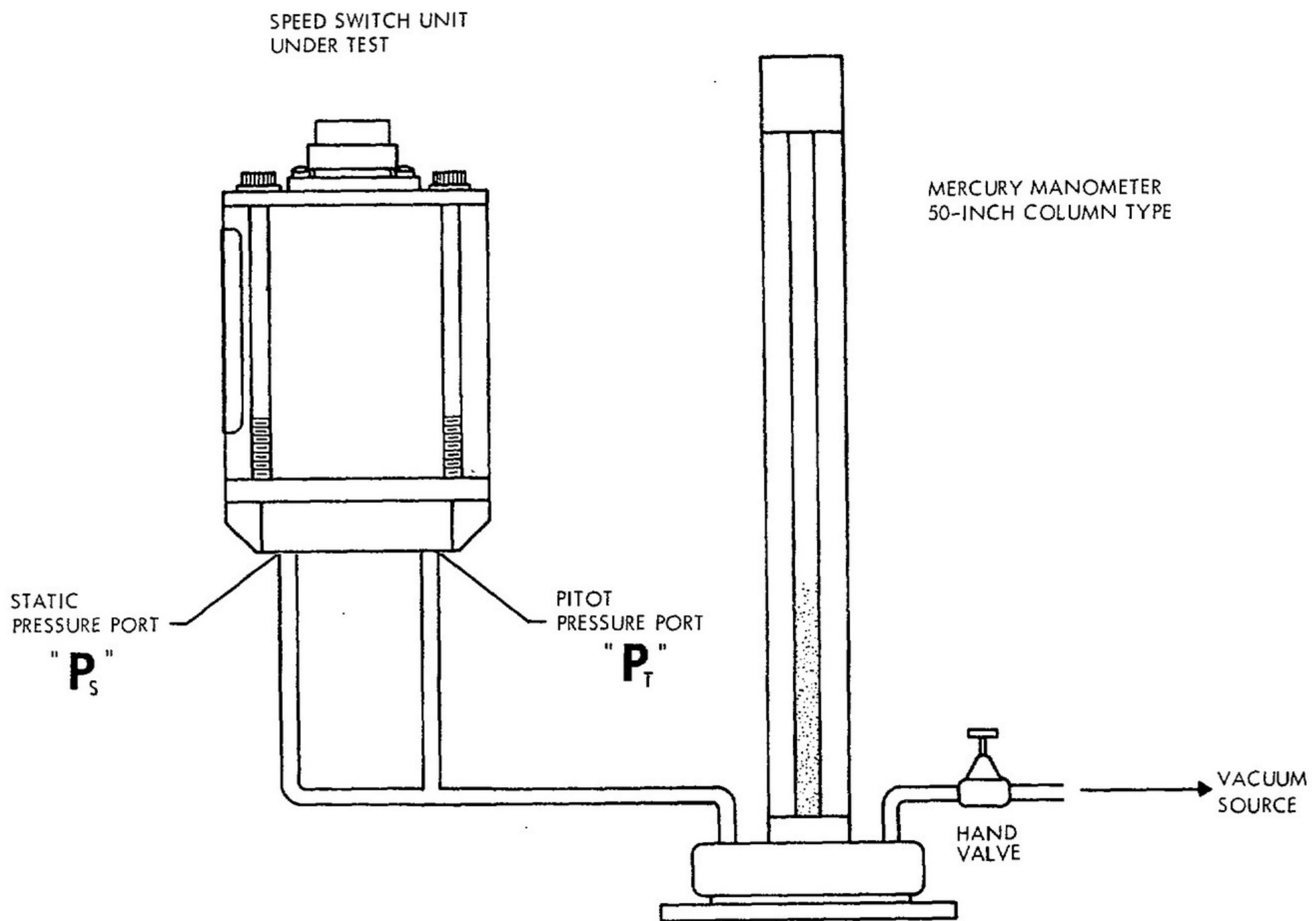
SPEED, KNOTS	PRESSURE, IN/HG	SPEED, KNOTS	PRESSURE, IN/HG	SPEED, KNOTS	PRESSURE, IN/HG
260	3.36284	264	3.47123	268	3.58154
261	3.38976	265	3.49863	269	3.60941
262	3.41680	266	3.52614	270	3.63741
263	3.44396	267	3.55378		

Troubleshooting Guide
Table 4

MALFUNCTION	PROBABLE CAUSE	CORRECTIVE ACTION
Unit fails to operate	Capsule improperly positioned	Perform adjustment procedure in para 2C.
	Defective electrical receptacle	Check receptacle for defective insulation, and damaged pins.
	Ruptured capsule	Replace unit.
Unit fails to operate in tolerance	Capsule improperly positioned	Perform adjustment procedures in para 2C.
	Leaky capsule	Replace unit.
Unit fails to hold calibration setting	Out of calibration	Replace unit.

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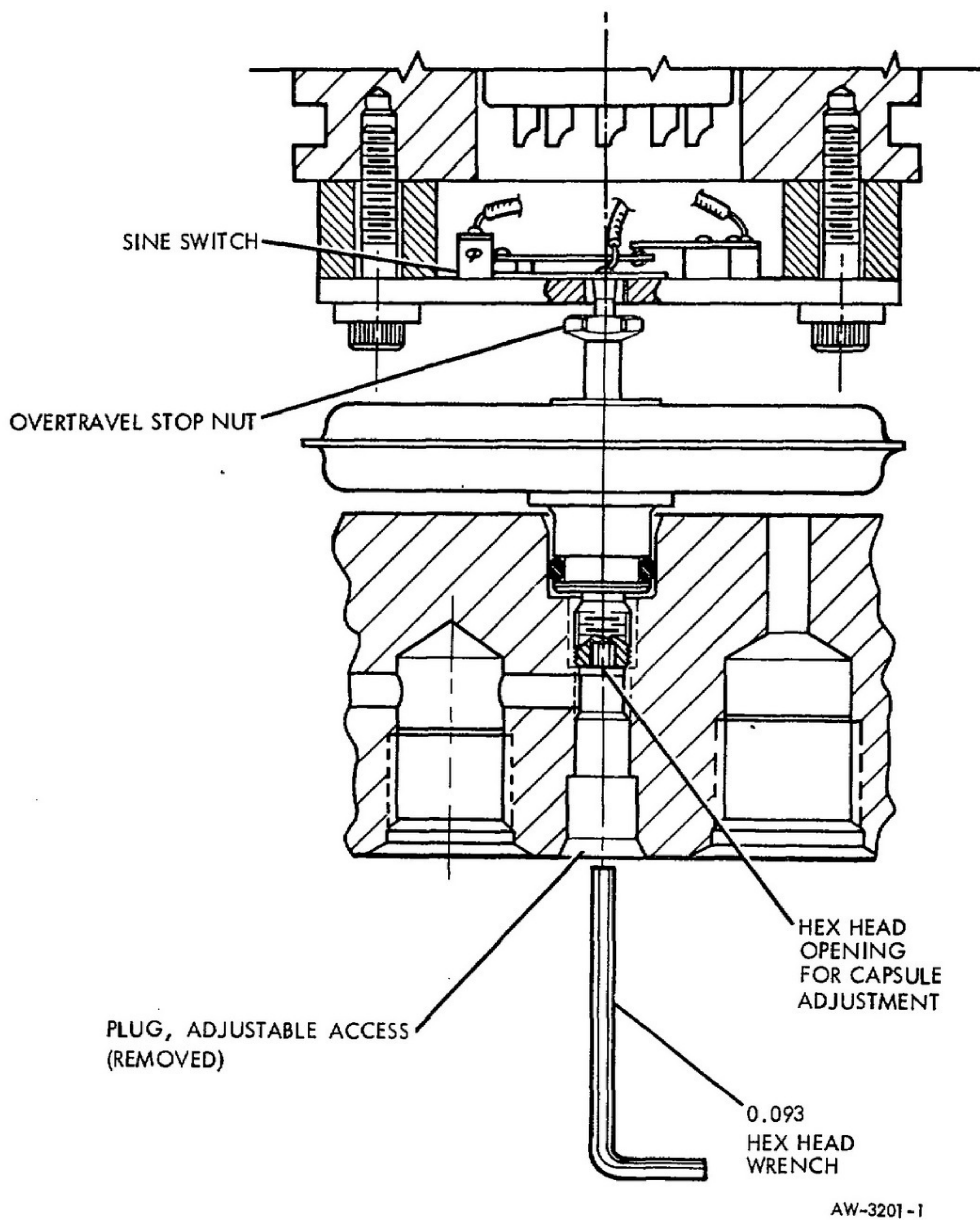
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Leakage Test Setup
Figure 4

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Switch Adjustment
Figure 5

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